Claims

1. A method of monitoring a quasi-periodic physiological function of a subject, comprising the steps of:

locating a fluid-filled bladder in a supportive load-bearing relationship with respect to the subject;

measuring a fluid pressure in the bladder;

isolating a perturbation of the measured pressure due to said periodic physiological process; and

identifying and monitoring at least a frequency or period of said perturbation.

2. The method of Claim 1, wherein the quasi-periodic physiological function is a heart rate of said subject, and the step of isolating a perturbation of the measured pressure due to said heart rate includes band-pass filtering perturbations of the measured pressure in the range of about 0.6Hz to 10Hz.

3. The method of Claim 2, wherein the band-pass filtering is in the range of about 2Hz to 7Hz.

4. The method of Claim 2, including the step of:

determining a variability of the isolated perturbation to determine heart rate variability.

5. The method of Claim 2, including the step of:

determining an amplitude of said perturbation as an indication of the subject's differential blood pressure.

6. The method of Claim 5, including the step of:

measuring a variability of the determined amplitude with respect to time.

7. The method of Claim 5, including the step of:

using said amplitude as an indication of the subject's health, alertness, awareness or impairment.

8. The method of Claim 1, wherein the quasi-periodic physiological function is a respiration rate of said subject, and the step of isolating a perturbation of the measured pressure due to said respiration rate includes band-pass filtering perturbations of the measured pressure in the range of about 0.15Hz to 0.5Hz.

9. The method of Claim 8, including the step of:

determining a variability of the isolated perturbation to determine respiration rate variability.

10. The method of Claim 8, including the step of:

determining an amplitude of the isolated perturbation as an indication of the subject's respiration volume.

11. The method of Claim 10, including the step of:

measuring a variability of the determined amplitude with respect to time.

12. The method of Claim 10, including the step of:

using said amplitude as an indication of the subject's health, alertness, awareness or impairment.

13. The method of Claim 1, including the step of:

adjusting an inflation level of said bladder to optimize the measured pressure and comfort of the subject.

14. The method of Claim 1, wherein there are two or more fluid-filled bladders, and the measured pressure is a differential pressure between the bladders.

15. The method of Claim 1, including the steps of:

independently measuring environmental disturbances that affect the measured pressure; and

compensating the measured pressure for such independently measured environmental disturbances.

16. The method of Claim 1, including the step of:

measuring a variability of the isolated perturbation with respect to time.

17. The method of Claim 1, including the step of:

using the monitored frequency or period of said perturbation as an indication of the subject's health, alertness, awareness or impairment.

18. The method of Claim 1, including the step of:

using said frequency or period of said perturbation as an indication of possible criminal intent of the subject.

19. The method of Claim 1, wherein the subject is disposed in a vehicle, and the method includes the step of:

using said frequency or period of said perturbation to assess a medical condition of the subject after a collision of the vehicle, including whether the subject is alive or present.

20. The method of Claim 19, including the step of:

confirming the presence of the subject by determining a weight of the subject from a DC pressure in said bladder.

21. The method of Claim 19, including the step of:

determining that said vehicle has overturned or that said subject is still wearing a seat belt.

22. The method of Claim 19, including the step of:

automatically communicating said medical condition.

23. A method of monitoring a non-periodic physiological disorder of a subject, comprising the steps of:

locating a fluid-filled bladder in a supportive load-bearing relationship with respect to the subject;

measuring a fluid pressure in the bladder;

monitoring abnormally large variations in the measured pressure; and

using said abnormally large variations to detect choking, convulsions, seizures, coughing, maternal contractions or frequency of movement of said subject.

24. The method of Claim 23, including the steps of:

independently measuring environmental disturbances that affect the measured pressure; and

compensating the measured pressure for such independently measured environmental disturbances.

25. The method of Claim 23, including the step of:

using said abnormally large variations as an indication of the subject's health, alertness, awareness or impairment.

26. The method of Claim 23, including the step of:

communicating to the subject or another person if the subject is not moving enough for good health.

27. The method of Claim 23, including the step of:

using said abnormally large variations as an indication of possible criminal intent of the subject.

28. The method of Claim 23, wherein the subject is disposed in a vehicle, and the method includes the step of:

using said abnormally large variations to assess a medical condition of the subject after a collision of the vehicle, including whether the subject is alive or present.

29. The method of Claim 28, including the step of:

confirming the presence of the subject by determining a weight of the subject from a DC pressure in said bladder.

30. The method of Claim 28, including the step of:

determining that said vehicle has overturned or that said subject is still wearing a seat belt.

31. The method of Claim 28, including the step of:

automatically communicating said medical condition.